A STUDY OF THE EFFECTS OF COUNTERMEASURE DISPENSER LOCATION ON INFRARED DECOY EFFECTIVENESS (U)

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The latest generation of infrared guided missiles employs a wide variety of techniques designed to discriminate between the target aircraft and flares. As a result, every aspect of a flare design and employment has become increasingly important. In response to the threat, countermeasure designers are having to rethink countermeasure design and employment.

This study focuses on one aspect of the problem facing countermeasures designers, that of dispenser location. To that end the effectiveness of the current SH-60B Seahawk dispenser locations will be compared to those of the planned SH-60R. Each configuration will employ pyrotechnic and pyrophoric flares against a counter-countermeasures capable threat in hovering, non-maneuvering and maneuvering scenarios.

UNCLASSIFIED FEASIBILITY OF REPLACING OR SUPPLEMENTING THE EA-6B SUPPORT JAMMING SYSTEM USING UAV BASED JAMMER(U)

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(U) There are increasing demands by theater CINCS for EA-6B Electronic Attack aircraft to provide Stand-Off-Jamming support during peace operations, as well as to protect aircraft which have missions near and within hostile countries. To reduce some of the demands for the EA-6B, large-payload Unmanned Aerial Vehicles (UAVs) containing stand-off Electronic Attack packages are now feasible. This study analyzes the feasibility of replacing or supplementing the EA-6B support jamming system using a UAV based jammer. The Global Hawk UAV with the ALQ-99 Electronic Attack system are the base systems for this study. This added support along with Global Hawks increased connectivity, higher survivability, and long on station time would give the EA-6B added flexibility in its employment against advanced radar and SAM systems. Global Hawk would still perform its primary mission of collecting airborne imagery, when not required to support the Suppression of Enemy Air Defenses. In order to determine the appropriate Concept of Operations for Global Hawk as a Stand-Off-Jammer, this study includes a threat analysis, and a determination of required airframe and electrical modifications.

THE INTEGRATION OF SITUATIONAL AWARENESS BEACON WITH REPLY (SABER) WITH THE ENHANCED POSITION LOCATION REPORTING SYSTEM (EPLRS)

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In 1992, the Joint Requirements Oversight Council validated a combat identification mission need statement. In support of the requirement for system interoperability, this thesis proposes a concept of operations for integrating two systems, Situational Awareness Beacon with Reply (SABER) and the Enhanced Position Location Reporting System (EPLRS).

SABER is a program initiated by Naval Space Command to provide real-time combat identification (CID) to the tactical user. It uses UHF satellite communications technology in conjunction with the Global Positioning System (GPS) to provide positioning information for up to 500 users.

EPLRS is a situational awareness program used extensively by the U.S. Army to support tactical battlefield operations. In addition to providing automatic friendly identification of EPLRS-equipped units, it has a communications capability that allows for the passage of intelligence and targeting data, messages, and status reports. However, EPLRS operates in a line-of-sight mode only and uses military grid reference coordinates vice GPS for positional information.

The integration of SABER and EPLRS has the potential to serve a major role in the armed services' common goal of reduced fratricide. This thesis gives a detailed description of both systems, examines their individual capabilities and limitations, discusses the ways in which the two systems complement each other, and provides a recommended integrated concept of operations.

WEAPONS OF MASS DESTRUCTION AND TERRORISM:
PROLIFERATION BY NON-STATE ACTORS
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Executive Order No.12938 signed by President Clinton on November 14, 1994 declared a national emergency with respect to the unusual and extraordinary threat that proliferation of weapons of mass destruction (those weapons categorized as nuclear, chemical, or biological) poses to the national security, foreign policy, and economy of the United States.

In the wake of the Cold War, a new world disorder seems to be emerging wherein the legitimacy of many states is being challenged from within by increasing non-state calls for self-determination from the likes of religious cults, hate groups, isolationist movements, ethnic groups, and revivalist movements. These movements often prey on the insecurities of the population, offering to fill psychological, social, political, or religious security needs of those who would join them. Religious oriented groups appear to share a common ideology which rejects existing social, economic, and political structure demanding a drastic revision of the world—a world where they become the authoritarian, dominant influence. These are the Post-Modem Terrorists who possess a "ripeness" to threaten use of weapons of mass destruction.

This study presents an argument suggesting that terrorist groups operating under the veneer of religion are truly the most likely candidates to threaten use of weapons of mass destruction in a mass casualty causing terrorist act.

A HIGH POWER MICROWAVE APPLICATION FOR INFORMATION OPERATIONS (U)
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(U) This thesis documents the requirement, concept, and validation process for the feasibility demonstration of a high power microwave application for Information Operations. Information Warfare (IW) and Information Operations (IO) are about providing the commander or decision-maker with options. Information Attack provides new courses-of-action for the commander when pursuing his mission objectives and gives him unique capabilities to attack the adversary in previously unimaginable ways. In order to procure any new weapons system, there must be a valid requirement for the system. In some cases, if the technology already exists, or if the system under consideration is an extension of an existing requirement, the

new system concept may be validated by a feasibility demonstration. Supporting documents to this thesis provide summaries of testing conducted to demonstrate and quantify the potential effectiveness of the application.

A ROBUST METHODOLOGY TO EVALUATE AIRCRAFT SURVIVABILITY ENHANCEMENT DUE TO COMBINED SIGNATURE REDUCTION AND ONBOARD ELECTRONIC ATTACK
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This thesis examines the effect of combining radar signature reduction and onboard electronic attack (EA) capability on the survivability enhancement of a generic joint strike fighter (JSF). The missions of a generic JSF are examined, and a tactical scenario for an air-to-air mission and a strike mission are presented. The principles of signature reduction and EA using onboard Electronic Countermeasures (ECM) are reviewed. The effect of signature level and of jammer effective radiated power (JERP) on the ability of a radar to detect the JSF are determined individually. Finally, an approach for combining the two survivability enhancement features is described, in the context of the two tactical JSF scenarios, and an EXCEL spreadsheet program entitled RCS-JERP is developed using unclassified radar and EA equipment data. Although all of the material in this thesis and in RCS-JERP are unclassified, the principles, methodology, and spreadsheet can be applied to specific (and classified) scenarios by utilizing the specific radar data, applicable mission threat analyses, and the effectiveness of the specific EA techniques employed.

STRATEGIC IMPACT OF IRANIAN DATA COMMUNICATIONS UPGRADES (U)
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Information Warfare goals include assessing an objective from a broad perspective, including the entire system of which the target in question is impacted by. This paper performs a case study against new, modern telecommunications systems and their impact on national strategies. Specific areas which effect the decisions of the top government officials are studied and reviewed. The impact of culture and how it prejudices a decision-maker is integrated with geographic and climate concerns. Other concerns, such as demographics and the impact this has on new installations is then added to the mix. These issues are then represented as a background to the more technical aspects of the telecommunications upgrades being experienced. Specifically, the digitization of all areas of the radio frequency spectrum and the innovation in switching technologies are included as part of this technological explosion and advance. Finally, the impacts the decisions (regarding the technological upgrades) have on national strategies, national policies, and how they impact the United States are addressed.

A SYSTEM ANALYSIS OF A NEW ASCM SIMULATOR
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This research applied a Systems engineering approach to identity the technical characteristics for an improved ALQ-17O(V) Anti-Ship Cruise Missile (ASCM) simulator. This simulator pod attaches to a F/A-18C Hornet to provide ASCM defense training. The new simulator provides a fully coherent, multi-polarization, broad band simulator that emulates all current and postulated ASCM threats through the year 2020.

A set of requirements were developed from the Operational Requirements Document (ORD) for the ALQ-170 Performance Enhancement Program (PEP) and fleet messages. Five design alternatives were examined through a number of trade-off studies in order to identify a preferred configuration. Multiple Attribute Utility Theory (MAUT) was used to score the five alternatives to determine the best possible replacement for the ALQ-170. The preferred configuration provides true "dial-a-threat" capability whereby any one of over 125 known ASCM threats are simulated upon operator command.

THE RULES OF ENGAGEMENT IN THE CONDUCT OF SPECIAL OPERATIONS
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This thesis examines the effect that ROE have on the conduct of special operations in order to contribute to an increased understanding of the proper employment of elite forces. It argues that "inappropriate" ROE can result from: 1) an imbalance in the natural tension between the requirements of statecraft and military efficiency present in all military operations and 2) organizational friction resulting from inaccurate translation of broad political objectives, through various levels in the chain of command, into an inappropriate tactical ROE for a specific unit. Additionally, it argues that the nature of special operations, and the principles vital to their proper employment, cause them to be most sensitive to these sources of inappropriate ROE in either crisis or conflict. This thesis concludes that ROE can be used to achieve indirect political control over special operations, but achieving this control is more difficult and more hazardous with special operations than with conventional forces.

A STUDY ON THE INFRARED SUSCEPTIBILITY OF THE SH-60B SEAHAWK TO THE SA-16 GIMLET IR SAM (U)
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The survivability of a helicopter in a hostile man-made environment is a function of the aircraft's vulnerability and susceptibility. Because vulnerability is determined in the aircraft's design, susceptibility is the primary concern of the aircrew and mission planners.

The Navy's SH-60B Seahawk was initially designed for the primary mission of Undersea Warfare (USW) in the benign open ocean environment. It has since evolved into a multi-mission platform with the added roles of Antisurface Warfare (ASUW) and ASUW attack. Furthermore, the helicopter must now confront the potential threats associated with the littorals, those coastal regions characterized by high sea and air traffic.

This thesis will investigate the susceptibility of the SH-60B Seahawk to the Russian SA-16 infrared missile, a man-portable air-defense system (MANPAD). The digital computer program MOSAIC (Modeling System for Advanced Investigation of Countermeasures) will be used to evaluate the SH-60B's current infrared countermeasure systems.